

**SPORT FISHING IN ALBERTA
1990**

**Summary Report of the
National Sport Fishing Survey**

**Alberta Environmental Protection
Natural Resources Service
Fisheries Management Division**

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1.0 INTRODUCTION

Details about sport fishing in Alberta in 1990 were obtained to evaluate the importance of this fishery to the public, to anglers and to the sport fishing industry. The survey was conducted in 1991 by Alberta Environmental Protection, Fish and Wildlife Services, in cooperation with the Surveys Unit, Economic Analysis and Statistics Division of Canada Fisheries and Oceans, Ottawa.

The 1990 survey was the fourth in a series of nationally coordinated studies conducted by Canada's federal, provincial and territorial fisheries agencies. The surveys have been carried out at five-year intervals to develop an understanding of, and trends in, Canada's sport fishery. This report provides information on the economic benefits, fishing pressure and fish harvest for the Alberta sport fishery in 1990.

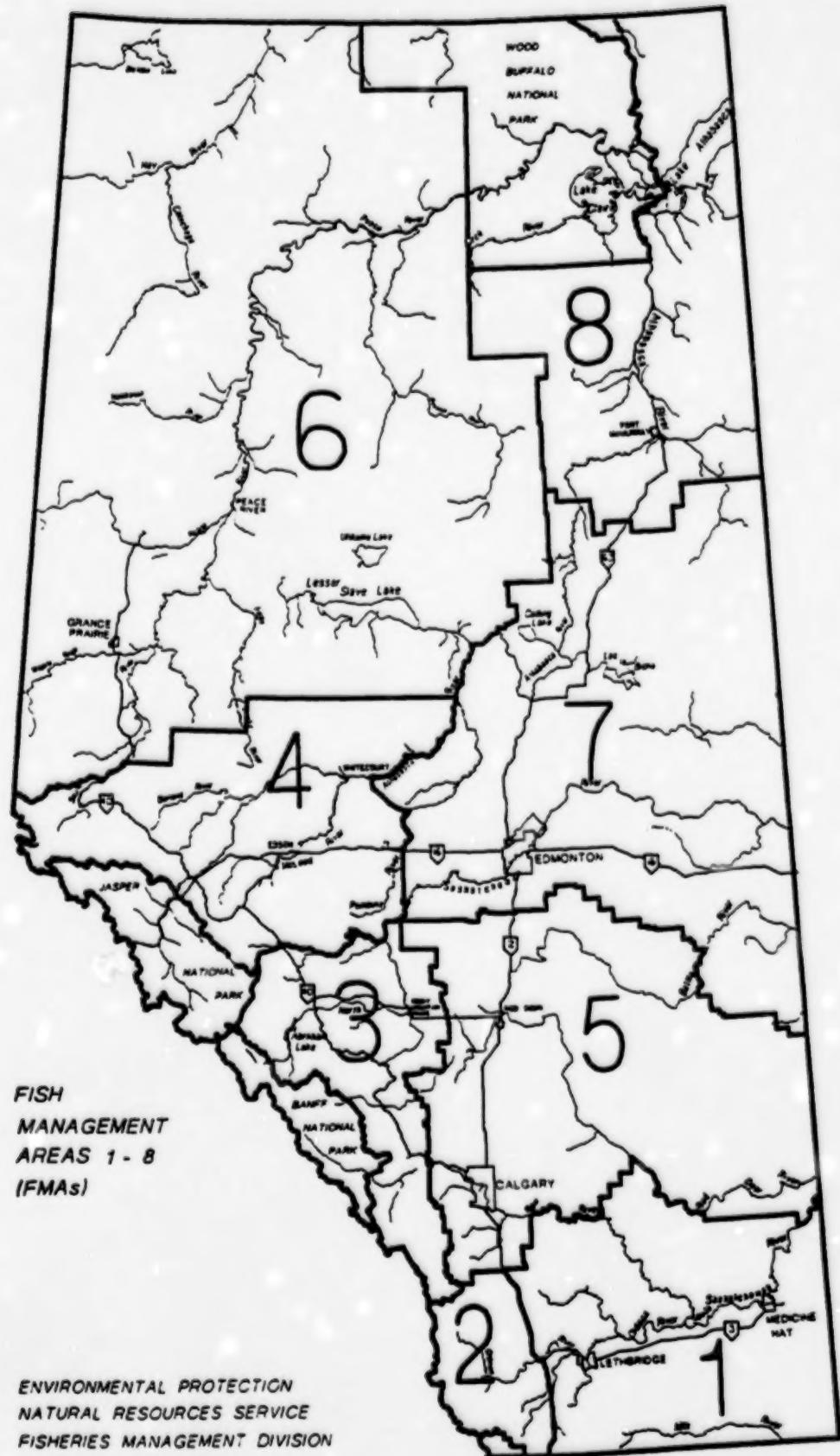
Sixty-one percent (3,543) of the questionnaires sent to holders of Alberta sport fishing licences in 1990 were completed and returned to provide the basis for the information given in this report. After extrapolating data from these returns, gathering information on known licence numbers and comparing estimates, this overall description of sport fishing in Alberta was developed.

2.0 RESOURCE BASE

Alberta offers diverse angling opportunities in lakes and streams in the mountains, foothills, prairies, parkland and boreal forests. Many excellent lakes are easily accessible. Several lakes, usually remote, have trophy status and provide a better than average opportunity to catch a large fish. Mountain and foothill regions contain seven species of trout, and mountain whitefish, shifting to Arctic grayling in northern portions. The Bow and Crowsnest rivers are renowned for rainbow and brown trout fishing. Lake trout are available in a few of the deeper lakes, mainly in northern Alberta, and provide unique fishing opportunities. Walleye, northern pike and yellow perch dominate the fisheries in lakes throughout the central and northern areas of the province.

Of the 59 species of fish available in Alberta, 17 are of interest to anglers. Overall, trout are the most popular sport fish; however, walleye is becoming a very popular and preferred species.

Each year Fish and Wildlife Services stocks millions of fish into water bodies in Alberta to improve angling opportunities. In 1990, 1.7 million trout were stocked throughout the province to provide trout fisheries where few other opportunities exist. As part of the program to recover walleye populations and establish new populations in suitable lakes, 36.5 million walleye fry and fingerlings were stocked in 1990.



FISH
MANAGEMENT
AREAS 1 - 8
(FMAs)

3.0 ANGLER PROFILE

3.1 Numbers

In 1990, 249,976 adults held sportfishing licences in Alberta (Table 1). About 92% of the resident anglers and 95% of the nonresident anglers actively fished. Seventy-nine percent of the active resident adults and 91% of the nonresidents were male. As well, 98,042 children under the age of 16 living in households of licensed anglers also fished. The total estimated population of active anglers in Alberta in 1990 (excluding seniors) was 327,077. The impact on Alberta's sport fishery of anglers who do not require a licence and who are not covered by this survey (over 65 years of age and under 16 years of age), is probably considerable.

TABLE 1. NUMBERS AND CHARACTERISTICS OF ANGLERS IN ALBERTA, 1990

ANGLING POPULATION	NON-RESIDENT			TOTAL
	RESIDENT	CANADIAN	OTHER	
LICENCED				
ANGLERS (a)	240 728	4604	4644	249 976
ANGLERS (b)				
MALE	174 858	3761	4176	182 795
FEMALE	45 425	431	384	46 240
TOTAL	220 283	4192	4560	229 035
ANGLERS				
<16 YRS (c)	96 560	966	516	98 042
TOTAL ACTIVE				
ANGLERS	316 843	5158	5076	327 077

Canadian - non-resident anglers who live in provinces/territories other than Alberta.

(a) Individuals who purchased an angling licence in Alberta in 1990.

This group provides the basis for the statistical information presented in this bulletin.

(b) Active resident anglers over the age of 65 do not require a licence and were not included in the survey.

(c) Minimum estimates because only households of licenced anglers were surveyed.

3.2 Origins

Residents of Alberta made up 96% (240,728) of the total licensed anglers. About 48% of the 9,248 nonresident anglers in 1990 were Canadians, mainly from British Columbia and Saskatchewan (Table 2). Most of the remaining nonresident anglers were United States citizens.

TABLE 2. ORIGINS OF NON-RESIDENT ANGLERS WHO FISHED IN ALBERTA, 1990

CANADIAN	NUMBER	NON-CANADIAN	NUMBER
MARITIMES	39	UNITED STATES	
QUEBEC	39	HAWAII	36
TERRITORIES	59	EAST SOUTH CENTRAL	71
MANITOBA	235	MID-ATLANTIC	148
ONTARIO	627	NEW ENGLAND	225
SASKATCHEWAN	1547	WEST SOUTH CENTRAL	225
BRITISH COLUMBIA	2058	WEST NORTH CENTRAL	296
		EAST NORTH CENTRAL	302
		SOUTH ATLANTIC	343
		PACIFIC	1053
		MOUNTAIN	1791
		SUB-TOTAL	4490
		OTHER COUNTRIES	154
CANADIAN TOTAL	4824	NON-CANADIAN TOTAL	4844
		GRAND TOTAL	9248

3.3 Motivations

Anglers rated relaxation, enjoyment of nature and getting away as very important motives for fishing (Table 3). Challenge and excitement, family togetherness, and companionship were also important motivations. Catching fish to eat, improving fishing skills and obtaining a sense of achievement were rated moderately important. Less importance was given to catching trophy fish.

TABLE 3. RELATIVE IMPORTANCE OF FACTORS ASSOCIATED WITH THE MOTIVES FOR FISHING IN ALBERTA IN 1990*

FACTOR	RESIDENT	NON - RESIDENT	
		CANADIAN	OTHER
RELAXATION	4.4	4.4	4.4
ENJOY NATURE	4.3	4.1	4.2
GET AWAY	4.2	4.0	3.9
CHALLENGE AND EXCITEMENT	3.6	3.7	3.9
FAMILY TOGETHERNESS	3.6	3.6	3.1
COMPANIONSHIP	3.2	3.2	3.3
CATCH FISH TO EAT	3.2	2.9	2.4
IMPROVE FISHING SKILLS	2.6	2.6	2.6
SENSE OF ACHIEVEMENT	2.2	2.2	2.7
CATCH A TROPHY FISH	1.9	1.9	2.7

*FACTOR RATINGS ARE: 0, NOT IMPORTANT TO 5, EXTREMELY IMPORTANT

Lack of pollutants in fish and water quality were rated the two most important factors when choosing a fishing destination (Table 4). Residents and nonresidents alike also considered the following as important to very important factors: lack of angler crowding, natural beauty of the area, presence of a favourite fish species, travel time or distance, size of fish caught, and the catch rate for all fish caught. The ability to

fish from shore and the catch rate of fish that could be kept were considered moderately important to important. Other factors, such as information about the area, variety of fish species, marinas, parking, and tourist facilities, were rated slightly to moderately important.

TABLE 4. RELATIVE IMPORTANCE OF FACTORS ASSOCIATED WITH THE CHOICE OF A FISHING DESTINATION IN ALBERTA IN 1990*

FACTOR	RESIDENT	NON-RESIDENT CANADIAN	OTHER
LACK OF POLLUTANTS IN FISH	4.3	4.0	3.9
WATER QUALITY	4.2	3.9	4.2
LACK OF ANGLER CROWDING	3.7	3.5	3.9
NATURAL BEAUTY OF AREA	3.6	3.5	3.7
PRESENCE OF FAVOURITE SPECIES	3.5	3.5	3.7
DISTANCE/TRAVEL TIME	3.3	3.1	2.7
SIZE OF FISH	3.2	3.1	3.8
CATCH RATE FOR ALL FISH	3.1	3.2	3.6
PLACES TO FISH FROM SHORE	3.0	3.2	2.5
CATCH RATE OF FISH YOU KEEP	3.0	3.0	2.8
ABSENCE OF OTHER RECREATIONALISTS	3.0	2.8	3.3
PRESENCE OF WILDLIFE	3.0	2.8	3.1
INFORMATION ABOUT THE AREA	2.9	3.0	3.2
VARIETY OF SPECIES AVAILABLE	2.9	2.8	2.8
BOAT LAUNCHING/MARINA	2.5	2.5	2.5
PARKING AVAILABILITY	2.4	2.7	2.4
CHANCE TO CATCH A TROPHY FISH	2.3	2.4	3.3
Tourist Facility Quality	2.0	2.5	2.3
Other Recreation Facilities	1.9	2.1	1.9
NEARNESS TO FOOD/LODGING	1.7	2.0	2.0
NEARNESS TO BAIT/TACKLE SHOPS	1.6	1.9	1.8
HANDICAPPED FACILITIES	1.6	1.6	1.5

*FACTOR RATINGS ARE 0, NOT IMPORTANT TO 5, EXTREMELY IMPORTANT

Nonresident anglers were asked what they would have done had no fishing opportunities been available in Alberta in 1990. Options provided were: stayed a shorter time, substituted other activities, or not come at all. Most nonresident anglers (40%) indicated they would have substituted other activities, 13% said they would have stayed a shorter time, 25% would not have come at all (17% offered no opinion).

Information used by anglers when selecting places to fish in Alberta most often was obtained from friends, family and other anglers (Table 5). Other information sources were seldom used.

3.4 Trip Information

Nonresident anglers made 60,358 trips to Alberta in 1990, of which 31% were for fishing (Table 6). For 60% of all fishing trips, fishing was the main reason for visiting the province. For the remainder of the fishing trips, fishing was a secondary reason or decided upon after arrival.

TABLE 5. RELATIVE IMPORTANCE OF INFORMATION SOURCES USED BY ANGLERS IN ALBERTA IN 1990*

FACTOR	RESIDENT	NON - RESIDENT	
		CANADIAN	OTHER
FRIENDS, FAMILY, OTHER ANGLERS	2.7	2.7	2.5
BAIT AND TACKLE SHOPS	1.6	1.5	1.6
BROCHURES, PAMPHLETS		1.5	1.8
MAGAZINES, NEWSPAPERS	1.5	1.3	1.5
ALBERTA FISH AND WILDLIFE	1.4	1.4	1.5
TELEVISION OR RADIO	1.3	1.1	1.2
OURDOO/SPORT SHOWS	1.2	1.2	1.3
OTHER	1.2	1.2	1.2
VIDEO TAPES	1.1	1.1	1.3
CLUBS, ASSOCIATIONS	1.1	1.1	1.2
TRAVEL AGENT	1.0	1.1	1.2

*FACTOR RATINGS ARE: 1, NEVER USED; 2, SOMETIMES USED; AND 3, ALWAYS USED

TABLE 6. TRIP CHARACTERISTICS OF NON-RESIDENT ANGLERS IN ALBERTA, 1990

CHARACTERISTIC	CANADIAN	OTHER	TOTAL
TRIPS TO ALBERTA - ALL REASONS	54 084	6278	60 368
FISHING TRIPS TO ALBERTA	12 983	5605	18 588
PROPORTION (%)	24.0	89.3	30.8
DAYS SPENT FOR ALL REASONS	158 927	59 385	218 312
DAYS FISHED	29 019	25 515	54 534
PROPORTION (%)	18.3	43.0	25.0
FISHING TRIPS			
MAIN REASON FOR VISIT	7656	3440	11 096
SECONDARY REASON	2624	1785	4409
DECIDED AFTER ARRIVAL	2704	379	3083
DAY TRIPS FOR FISHING	7166	349	7515
OVERNIGHT TRIPS FOR FISHING	5817	5256	11 073
ACCOMMODATIONS USED (% OF OVERNIGHTS)			
FRIENDS AND RELATIVES	31.5	18.4	25.1
HOTEL, MOTEL, RENTAL COTTAGE	4.3	21.7	12.8
WILDERNESS CAMPING	3.6	20.6	11.8
COMMERCIAL CAMPGROUND	9.9	2.9	8.1
PROVINCIAL PARK	5.8	9.9	7.3
FISHING LODGE, CAMP	1.1	4.5	2.8
CROWN LAND CAMPING	9.0	2.9	1.9
COTTAGE OWNED BY HOUSEHOLD	2.0	5.0	1.3
OTHER	40.9	16.3	29.0
TOTAL NIGHTS SPENT ON FISHING TRIPS	48 910	46 287	95 197

Nonresident anglers stayed in the province for a total of 218,312 days, of which 54,534 days (25%) were spent fishing (Table 6). The average length of a fishing trip was 2 days for nonresident Canadian anglers and 5 days for other nonresident anglers. Nonresident Canadian anglers made more day trips for fishing than did other nonresident anglers. Both groups spent a similar number of days fishing in Alberta; 29,019 days and 25,515 days respectively.

In 1990, nonresident Canadians stayed mostly with friends and relatives, in commercial accommodations or in provincial parks (Table 6). Other nonresidents spent most of their nights in commercial accommodations, in wilderness camping areas, or with friends and relatives.

Approximately 72,500 resident anglers (30% of licensed adult resident anglers) fished outside Alberta in 1990. The most common reason for fishing outside the province was fishing while on vacation or at the cottage. British Columbia and Saskatchewan were the primary destinations.

3.5 Opinions

Anglers were asked to rate their fishing skills and their responses were grouped as follows: 15.4% said they were beginners, 50.5% said average, 29.8% said experienced and 2.5% said expert. On average, resident anglers had fished in Alberta for 17 years, nonresident Canadian anglers had fished in Alberta for 7 years and other nonresident anglers had fished in Alberta for 3 years. Eighty-two percent of the nonresident anglers also fished outside of Alberta in 1990.

The quality of fishing in Alberta was rated as good to excellent by 53% of the anglers (good: 33.5%, very good: 14.0% and excellent: 5.5%); 26.9% rated fishing as fair, and 19.1% rated the quality as poor. Sixty-six percent of the anglers said the quality of fishing had declined between 1985 and 1990 (29% said fishing had remained the same and 5% said it had improved). Overfishing was rated as an important to very important reason for the decline in the fishery (Table 7). Habitat degradation, pollution, poaching and water use conflicts were rated moderately important to important.

Ninety-six percent of resident anglers, 72% of nonresident Canadian anglers and 48% of other nonresident anglers said they would fish in Alberta again in 1991.

Resident anglers volunteered 92,540 days in 1990 to perform work in support of Alberta's recreational fishery. Approximately 9% of the licensed adult resident anglers were members of a national or provincial wildlife organization or local fish and game club. In 1990, 33% of resident anglers also hunted game or game birds in Alberta.

TABLE 7. RESPONDENT'S RATING OF CAUSES OF DECLINE IN THE FISHERY

REASON	NON - RESIDENT		
	RESIDENT	CANADIAN	OTHER
OVERFISHING	3.5	3.5	3.4
HABITAT DEGRADATION	2.9	2.5	1.8
POLLUTION	2.8	2.4	1.3
POACHING	2.4	2.6	1.7
WATER USE CONFLICTS	2.2	1.9	2.7
ACID RAIN	1.8	1.5	1.0
INTRODUCED SPECIES	1.5	1.5	1.1

*FACTOR RATINGS ARE: 0, NOT IMPORTANT TO 5, EXTREMELY IMPORTANT

4.0 EXPENDITURES AND INVESTMENTS

4.1 Direct Expenditures

In 1990, anglers spent \$134.2 million in Alberta on activities and supplies directly connected with sport fishing (Table 8). Residents spent more than \$130 million, or an average of \$591 per active angler. Nonresidents spent just over \$4 million, or \$458 per active angler. Food, lodging and transportation accounted for 84% of the expenditures of resident anglers and 63% of the expenditures of nonresident anglers.

TABLE 8. EXPENDITURES DIRECTLY ATTRIBUTABLE TO SPORTFISHING IN ALBERTA IN 1990 (CAN \$)

EXPENDITURE	RESIDENT	NON - RESIDENT	TOTAL
		CANADIAN	OTHER
FOOD AND LODGING (FOOD, MOTELS, CAMPING FEES)	49 013 471	470 629	1 057 718
TRANSPORTATION (TRAVEL COSTS, BOATING EXPENSES)	60 851 082	366 362	641 027
FISHING SERVICES (BOAT RENTAL, GUIDES, LICENCE FEES)	5 712 038	95 239	648 277
FISHING SUPPLIES (BAIT, TACKLE, ETC)	10 676 097	64 414	92 842
FISHING PACKAGES PURCHASED*	3 029 699	55 019	496 890
OTHER	860 108	9 604	13 119
TOTAL	130 142 495	1 061 267	134 153 635
AVERAGE PER ACTIVE ANGLER	591	253	586
AVERAGE PER ANGLER DAY	40	37	40

* VALUES EXPLAINED IN TABLE 9

In 1990, anglers spent \$3.6 million on fishing packages in Alberta (Table 9). These packages included costs such as aircraft, lodge facilities and charter boats. Fly-in camps were the most popular form of fishing package bringing in a revenue of nearly \$1.9 million. Fishing packages were purchased by 1.9% of resident anglers, 3.3% of nonresident Canadian anglers, and 16.0% of other nonresident anglers. These packages accounted for 2% of all resident expenditures and 14% of all nonresident expenditures.

TABLE 9. FISHING PACKAGES PURCHASED IN ALBERTA BY ANGLERS, 1990 (CDNS\$).

PACKAGE	RESIDENT	NON-RESIDENT		TOTAL
		CANADIAN	OTHER	
FLY-IN CAMP	1 492 752	39 355	325 222	1 857 329
LODGE	852 117	5 874	67 600	925 591
OTHER	684 830	9 790	104 068	798 688
TOTAL	3 029 699	55 019	496 890	3 581 608

4.2 Major Investments

In 1990, anglers invested \$389.6 million on durables and property, of which \$186.8 million (48%) was attributed to sport fishing in Alberta. Of this total, resident anglers invested \$384.8 million in Alberta and an additional \$3.6 million outside Canada or by mail (Table 10); of which about \$186 million (48%) was attributed to sport fishing. Nonresident anglers invested just over \$1.2 million in Alberta (Table 11), of which about \$0.8 million (64%) was attributed to sport fishing. The average investment attributed to sport fishing made by active resident anglers was \$844; and \$89 by active nonresident anglers.

Overall, direct expenditures and investments (in whole or in part) totalled \$523.8 million for goods and services in 1990, of which \$320.9 million, or 61%, was attributed to sport fishing in Alberta.

TABLE 10. MAJOR PURCHASES OR INVESTMENTS MADE BY RESIDENT ANGLERS,
ATTRIBUTED IN WHOLE OR IN PART TO SPORTFISHING IN 1990 (CDN \$)

EXPENDITURES	IN ALBERTA	BY MAIL	OUTSIDE ALBERTA	TOTAL	ATTRIBUTED TO SPORT FISHING
FISHING EQUIPMENT (RODS, REELS, FISH FINDERS, ETC)	12 676 317	662 783	880 146	14 219 247	14 219 247
BOATING EQUIPMENT (BOATS, MOTORS, TRAILERS, ETC)	69 458 777	7 686	682 908	70 149 372	47 376 086
CAMPING EQUIPMENT (TENTS, TRAILERS, ETC)	99 779 565	114 535	192 895	100 086 996	48 482 968
SPECIAL VEHICLES (4X4'S, CAMPERS, ATVS, ETC)	165 141 586		678 937	165 820 523	57 605 515
LAND - BUILDINGS (CABINS, COTTAGES, LAND, ETC)	32 491 593			32 491 593	13 608 876
OTHER (SPECIAL CLOTHING, WADERS, ETC)	5 241 349	152 633	260 302	5 654 283	4 709 327
TOTAL	384 789 187	937 637	2 695 188	388 422 012	186 002 019
AVERAGE PER ACTIVE ANGLER	1 747	4	12 1 763		844

TABLE 11. MAJOR PURCHASES OR INVESTMENTS MADE BY NON-RESIDENT ANGLERS.
ATTRIBUTED IN WHOLE OR IN PART TO SPORTFISHING IN 1990 (CDN\$).

EXPENDITURES	CANADIAN TOTAL		OTHER TOTAL		TOTAL FISHING	
	FISHING		FISHING		FISHING	
FISHING EQUIPMENT (RODS, REELS, FISH FINDERS, ETC)	72 385	72 385	31 513	31 513	103 898	103 858
BOATING EQUIPMENT (BOATS, MOTORS, TRAILERS, ETC)	177 194	177 194	10 029	10 029	187 223	187 223
CAMPING EQUIPMENT (TENTS, TRAILERS, ETC)	21 508	17 113	0	0	21 508	17 113
SPECIAL VEHICLES (4X4'S, CAMPERS, ATVS, ETC)	857 931	428 966	14 232	7 116	872 163	436 082
LAND - BUILDINGS (CABINS, COTTAGES, LAND, ETC)	0	0	6 226	5 337	6 226	5 337
OTHER (SPECIAL CLOTHING, WADERS, ETC)	34 930	29 372	4 125	2 888	39 055	32 260
TOTAL	1 163 948	725 030	66 125	56 883	1 230 073	781 913
AVERAGE PER ACTIVE ANGLER	278	173	15	12	141	89

4.3 Willingness to Pay

Active anglers were asked "what is the maximum additional amount you would have paid per day before deciding it was too expensive to fish the same number of days in Alberta in 1990?" Choices given and results obtained are shown in Table 12. Seventy-seven percent of anglers who fished in Alberta in 1990 expressed a willingness to pay more if their daily fishing cost had been higher due to increased costs for gasoline, accommodation, supplies or other services. Of these anglers, 39% would have stopped fishing, or reduced their time fishing, when their additional costs per day reached \$10. Sixty-four percent of the anglers would have adjusted their fishing activities before, or when they reached a maximum additional

cost of \$20; 75% by \$30; 79% by \$40; and 94% by \$100. About 2% of the anglers indicated a willingness to pay more than \$100 in additional costs per day. When extrapolating the results on an active angler basis to all active anglers, the total additional amount anglers indicated they were willing to pay to go fishing in Alberta in 1990 was approximately \$66 million.

TABLE 12. ADDITIONAL COSTS ACTIVE ANGLERS INDICATED THEY WERE WILLING TO PAY PER DAY FOR FISHING IN ALBERTA IN 1990

ADDITIONAL COST PER DAY (CDN \$)	RESIDENT		CANADIAN		NON-RESIDENT		TOTAL	
	%	%*	%	%*	%	%*	%	%*
< 10.00	16.7	16.7	18.6	18.6	17.3	75.8	16.7	16.7
10.00	2.1	38.8	28.1	46.7	9.2	75.8	22.0	38.7
20.00	25.3	64.1	21.5	68.2	19.8	75.8	25.2	63.9
30.00	10.6	74.7	6.7	74.9	12.0	88.3	10.6	74.5
40.00	4.7	79.4	1.5	76.4	1.4	93.4	4.6	79.1
50.00	9.6	89.0	10.4	86.8	14.9	99.9	9.7	88.8
60.00	1.0	90.0	0.0	86.8	0.0	74.6	1.0	89.9
70.00	0.8	90.8	1.5	88.3	1.2	75.8	0.8	90.6
80.00	1.2	92.0	0.0	88.3	0.0	75.8	1.1	91.7
90.00	0.1	92.1	0.7	89.0	0.0	75.8	0.1	91.8
100.00	2.5	94.6	3.0	92.0	12.5	88.3	2.6	94.4
>100.00	1.5	96.1	3.7	95.7	5.1	93.4	1.6	96.0
UNKNOWN	3.8	99.9	4.4	100.0	6.5	99.9	3.9	99.9
ANNUAL TOTAL	64 857 442		395 134		674 104		65 926 680	
AVERAGE PER ANGLER DAY	294		94		148		288	

*CUMMULATIVE PERCENTAGE

5.0 FISHING EFFORT

Angling in Alberta is a major recreational activity. Anglers fished a total of about 3.3 million days in 1990 (Table 13). On the average, each angler spent 14.6 days fishing. Ninety-eight percent of the total fishing effort was expended by resident anglers. Resident anglers fished an average of 14.9 days, while nonresidents fished an average of 6.2 days.

Eighty-three percent of all fishing effort occurred during the open-water season (Table 13). During that time 82% of resident, 90% of nonresident Canadian and 96% of other nonresident fishing effort was expended. Resident anglers accounted for 99.5% of all fishing through ice.

Alberta was divided into ten statistical areas representing the province's eight Fish Management Areas (FMAs), and Jasper and Banff national parks. Resident and nonresident anglers favoured FMA 7 (Northeast), FMA 5 (Central) and FMA 1 (Southern). In general, Alberta anglers spent twice as much time fishing in FMA 7 as in any other area of the province (Table 14).

TABLE 13. FISHING EFFORT (ANGLER-DAYS) BY SEASON IN ALBERTA IN 1990

SEASON	RESIDENT	NON - RESIDENT CANADIAN	OTHER	TOTAL
FISHING IN OPEN WATER	2 708 113	26 532	24 937	2 759 582
AVERAGE PER ACTIVE ANGLER	11.8	6.3	5.5	12.0
FISHING THROUGH ICE	577 686	2 487	578	580 751
AVERAGE PER ACTIVE ANGLER	2.6	0.6	0.1	2.5
TOTAL	3 285 799	29 019	25 515	3 340 333
AVERAGE PER ACTIVE ANGLER	14.9	6.9	5.6	14.6

TABLE 14. GEOGRAPHICAL DISTRIBUTION OF SPORTFISHING EFFORT IN ALBERTA IN 1990

STATISTICAL AREA	RESIDENT MAN-DAYS	NON-RESIDENT MAN-DAYS	TOTAL MAN-DAYS	%
FMA 1				
SOUTHERN	351 945	10.7	6 337	11.6
FMA 2	187 848	5.7	4 841	8.9
FMA 3	330 040	10.0	3 900	72.0
EAST SLOPES	231 966	7.1	2 185	4.0
FMA 4	617 269	18.8	7 869	14.4
HINTON	273 163	8.3	7 479	13.7
FMA 5	1 143 919	34.8	14 239	26.1
CENTRAL	78 782	2.4	4 630	8.5
FMA 6	24 826	0.8	685	1.3
PEACE RIVER	44 887	1.4	1 093	2.0
FMA 7	1 154		1 276	2.3
NORTHEAST				
FMA 8				
ATHABASCA				
9 *				
JASPER				
10 *				
BANFF				
UNKNOWN				
TOTAL	3 285 799	100.0	54 534	100.0
			3 340 333	100.0

* ONLY FISH HARVESTED BY ANGLERS HOLDING ALBERTA SPORTFISHING LICENCE AND NOT THE TOTAL HARVEST OF ALL ANGLERS HOLDING NATIONAL PARKS LICENCES

6.0 FISH HARVEST

In 1990, anglers caught an estimated 13.7 million fish of all species and retained 5.1 million of them (Table 15). These fish weighed approximately 3.1 million kilograms or 6.9 million pounds. Resident anglers caught 99% of the fish harvested (by number).

Perch, northern pike, trout and walleye were the most widely taken species, accounting for 90% of the catch and 88% of the harvest (Table 15). Of the 22 fish retained on average per active adult angler, 10 were perch, 5 were northern pike, 3 were trout, 2 were walleye and 2 were other species.

TABLE 15. HARVEST OF FISH SPECIES BY ANGLERS IN ALBERTA, 1990

FISH SPECIES	RESIDENT CAUGHT		NON-RESIDENT CAUGHT		TOTAL CAUGHT		TOTAL KEPT	% SPECIES RELEASED
	CAUGHT	KEPT	CAUGHT	KEPT	CAUGHT	KEPT		
NORTHERN PIKE	3 282 111	1 108 563	126 330	23 522	3 408 441	1 132 085	22.1	66.8
YELLOW PERCH	4 904 795	2 193 300	23 761	8 815	4 928 556	2 202 115	43.0	55.3
WALLEYE	1 457 588	446 792	37 047	9 752	1 494 635	456 544	8.9	69.5
TROUT*	2 407 434	723 337	79 267	11 109	2 486 701	734 446	14.4	70.5
GOLDEYE	165 404	20 445	1 961	502	167 365	20 947	0.4	87.5
MOUNTAIN WHITEFISH	563 446	190 871	6 356	423	569 802	191 294	3.7	66.4
LAKE WHITEFISH	400 137	314 976	1 368	553	401 505	315 529	6.2	21.4
ARCTIC GRAYLING	54 821	11 042	1 265	313	56 086	11 355	0.2	79.8
OTHER GAME FISH	31 820	12 296	1 738	256	33 556	12 554	0.2	62.6
OTHER FISH	106 222	40 583	1 127	255	107 349	40 838	0.8	62.0
TOTAL	13 373 776	5 062 207	280 220	55 500	13 653 998	5 117 707	100.0	62.5
WEIGHT OF FISH KEPT (LBS)	6 767 781		126 306		6 894 087			
WEIGHT OF FISH EATEN (LBS)	5 720 689		108 379		5 829 068			

*SEVEN TROUT SPECIES COMBINED

The distribution of fish harvest by Fish Management Area for each fish species is given in Table 16. In percentage of total provincial harvest for each species, 69% of the perch, 56% of the northern pike, 10% of the trout and 53% of the walleye were taken from FMA 7 (Northeast). FMA 7 produced 48% of the total fish of all species caught and 51% of the total of all fish kept in the province (Table 17). Anglers harvested nearly four times the number of fish from FMA 7 as from any other area of the province. The distribution of fish harvest by species in each Fish Management Area is given in Table 18. Ninety-two percent of the fish harvest from FMA 7 consisted of perch (59%), northern pike (24%) and walleye (9%).

TABLE 16. DISTRIBUTION OF HARVEST BY FISH MANAGEMENT AREA FOR EACH FISH SPECIES

FISH SPECIES	TOTAL NUMBER	FISH MANAGEMENT AREA											
		1 %	2 %	3 %	4 %	5 %	6 %	7 %	8 %	9 %	10 %	?? %	
NORTHERN PIKE	1 132 085	12.4	0.4	1.4	4.9	7.6	14.3	55.6	2.8	0.1	< 0.1	0.4	
YELLOW PERCH	2 202 115	5.3	0.0	3.0	5.1	11.8	3.8	69.0	1.2	0.0	< 0.1	0.8	
WALLEYE	456 544	4.2	0.0	1.6	3.9	7.2	23.0	53.3	6.4	0.0	< 0.1	0.3	
TROUT*	734 446	9.0	15.3	21.3	16.1	13.0	7.8	10.2	1.1	1.1	3.9	1.1	
GOLDEYE	20 947	19.1	0.0	0.4	0.0	58.7	2.6	14.6	3.9	0.0	0.0	0.7	
MOUNTAIN WHITEFISH	191 294	1.5	13.4	31.9	13.2	28.0	4.4	1.4	1.2	1.0	2.2	1.8	
LAKE WHITEFISH	315 529	3.6	0.2	11.0	6.3	36.1	6.5	33.6	0.1	0.1	< 0.1	2.4	
ARCTIC GRAYLING	11 355	0.0	0.0	0.0	44.4	0.0	25.6	8.1	19.8	2.0	0.0	0.0	
OTHER GAME FISH	12 554	24.8	10.4	4.5	12.2	34.9	0.6	3.4	0.0	8.0	0.0	1.2	
OTHER FISH	40 838	6.3	3.6	9.3	0.6	47.8	10.7	21.3	0.3	0.0	0.0	0.0	

?? . HARVEST AREA NOT REPORTED

*. SEVEN TROUT SPECIES COMBINED

TABLE 17. HARVEST OF FISH SPECIES BY FISH
MANAGEMENT AREAS (FMAs) IN ALBERTA IN 1990

STATISTICAL AREA	% NUMBERS CAUGHT		% NUMBERS TOTAL CAUGHT	
	CAUGHT	KEPT	CAUGHT	KEPT
FMA 1 (SOUTHERN)	879 152	6.4	365 052	7.1
FMA 2 (CROWSNEST)	602 044	4.4	146 460	2.9
FMA 3 (EAST SLOPES)	963 611	7.1	347 052	6.8
FMA 4 (HINTON)	967 137	7.1	357 021	7.0
FMA 5 (CENTRAL)	1 804 108	13.2	677 690	13.2
FMA 6 (PEACE RIVER)	1 286 861	9.4	445 089	8.7
FMA 7 (NORTHEAST)	6 484 396	47.5	2 589 760	50.6
FMA 8 (ATHABASCA)	400 238	2.9	100 816	2.0
9* (JASPER)	55 272	0.4	12 636	0.2
10* (BANFF)	75 172	0.6	33 324	0.7
UNKNOWN	136 007	1.0	42 780	0.8
TOTAL	13 653 908	100.0	5 117 707	100.0

* ONLY FISH HARVESTED BY ANGLERS HOLDING ALBERTA SPORTFISHING LICENCE AND

NOT THE TOTAL HARVEST OF ALL ANGLERS HOLDING NATIONAL PARKS LICENCE

TABLE 18. DISTRIBUTION OF FISH HARVEST BY SPECIES FOR EACH FISH MANAGEMENT AREA (FMAs) IN ALBERTA IN 1990

STATISTICAL AREA	TOTAL NUMBER	FISH SPECIES											
		NP %	YP %	WA %	TR %	GO %	MW %	LW %	AG %	OG %	OF %	TOTAL %	
FMA 1 SOUTHERN	365 052	38.4	31.7	5.3	18.1	1.1	0.8	3.1	0.0	0.9	0.7	100.0	
FMA 2 CROWSNEST	146 460	3.2	0.0	0.0	76.8	0.0	17.5	0.5	0.0	0.9	1.1	100.0	
FMA 3 EAST SLOPES	347 052	4.5	19.4	2.2	45.1	0.0	17.6	10.0	0.0	0.2	1.1	100.0	
FMA 4 HINTON	357 021	15.7	31.6	5.0	33.2	0.0	7.1	5.6	1.4	0.4	0.1	100.0	
FMA 5 CENTRAL	677 699	12.7	38.2	4.9	14.1	1.8	7.9	16.8	0.0	0.6	2.9	100.0	
FMA 6 PEACE RIVER	445 089	36.5	18.8	23.6	12.8	0.1	1.9	4.6	0.7	0.0	1.1	100.0	
FMA 7 NORTHEAST	2 589 769	24.3	58.7	9.4	2.9	0.1	0.1	4.1	<0.1	<0.1	0.3	100.0	
FMA 8 ATHABASCA	100 816	31.8	25.6	29.0	7.8	0.8	2.3	0.3	2.2	0.0	0.2	100.0	
9** JASPER	12 636	6.1	0.0	0.0	66.5	0.0	14.6	3.0	1.8	7.9	0.0	100.0	
10** BANFF	33 324	0.5	0.5	0.1	86.1	0.0	12.5	0.2	0.0	0.0	0.2	100.0	
UNKNOWN	42 789	11.6	40.1	2.7	19.5	0.4	7.9	17.4	0.0	0.4	0.0	100.0	

FISH SPECIES* YP - YELLOW PERCH NP - NORTHERN PIKE WA - WALLEYE TR - TROUT GO - GOLDEYE MW - MOUNTAIN WHITEFISH
LV - LAKE WHITEFISH AG - ARCTIC GRAYLING OG - OTHER GAME FISH OF - OTHER FISH

** ONLY FISH HARVESTED BY ANGLERS HOLDING ALBERTA SPORTFISHING LICENCE AND NOT THE TOTAL HARVEST OF ALL ANGLERS HOLDING NATIONAL PARKS LICENSE

In all, 62.5% of all fish caught were released by anglers practising voluntary catch-and-release fishing or by anglers compiling with size-limit regulations. Catch-and-release fishing was practised by 67% of resident anglers, 57% of nonresident Canadian anglers and 84% of other nonresident anglers. Over 40% of these anglers indicated they voluntarily practised catch-and-release fishing (Table 19).

TABLE 19. CATCH AND RELEASE ACTIVITIES OF ACTIVE ANGLERS IN ALBERTA IN 1990

	RESIDENT %	NON-RESIDENT		
		CANADIAN %	OTHER %	TOTAL %
PRACTISED	66.5	56.5	84.4	66.6
NOT PRACTISED	31.2	39.2	13.2	31.0
UNKNOWN	2.3	4.2	2.5	2.3
REASONS PRACTISED:				
MANDATORY	2.1	2.3	2.5	2.1
VOLUNTARY	43.3	38.8	50.5	43.4
BOTH	17.8	7.9	20.5	17.6
UNKNOWN	3.3	7.5	10.9	3.5

7.0 COMPARISONS of 1980, 1985, and 1990 RESULTS

Sportfishing licence sales, which had been increasing prior to 1985, decreased by 27% between 1985 and 1990, as did the number of active anglers by 25% (Table 20). The total days fished decreased by 38% from 1985, partially because of a reduced number of anglers, but also because the average number of days fished per angler declined from 17.6 days in 1985 to 14.6 days in 1990.

Major influences in the decline in resident licence sales and fishing effort between 1985 and 1990 are as follows: a three-fold increase in licence cost (from \$5 to \$15); a near doubling in the average cost of a day's fishing (from \$24 to \$40); regulation changes that increased spring closures, reduced catch limits and established size limits; and a significant loss of trout for stocking (Infectious Pancreatic Necrosis, IPN, in the hatchery system).

The total harvest of all species combined decreased by 54% from 11.2 million in 1985 to 5.1 million in 1990. Regulated and voluntary catch-and-release fishing contributed to the reduced fish harvest, possibly as much as did the reduced fishing effort and spring closures. Catch-and-release fishing increased by 47% (from 43% to 63%) between 1985 and 1990. Although the average fish catch per angler was similar, 64 fish in 1985 and 60 fish in 1990, the average fish harvest per angler was only 22 fish in 1990 compared to 37 fish in 1985.

The most notable decreases in fish harvest occurred with walleye (77%), trout (63%), perch (51%) and northern pike (46%). Catch-and-release fishing resulted in release rates for these species of 70%, 71%, 55%, and 67% respectively. Regulations for minimum size limits and reduced catch limits were established for trout in 1987 and for walleye in 1989. Size limits are not in effect for perch or pike, and the daily catch limits have remained unchanged since 1978. Voluntary increases in release rates for perch and pike may indicate general declines in the size of available fish for these species and the subsequent release of more small fish.

Expenditures and investments made by all anglers rose dramatically between 1980 and 1985 (92%), but only showed a slight increase in 1990 (17%). The total amount spent increased from \$446.9 million in 1985 to \$523.8 million in 1990. The total amount attributable to sport fishing increased from \$294.6 million in 1985 to \$320.9 million in 1990. The lower rate of increase may reflect the reduction in the number of active anglers; however, escalating costs of participating in the fishery are evident.

TABLE 20. COMPARISON OF ANGLER CHARACTERISTICS, DAYS FISHED
SPECIES HARVEST AND EXPENDITURES IN ALBERTA IN 1980, 1985, 1990

	RESIDENT		NON-RESIDENT			TOTAL			
	1980	1985	1990	1980	1985	1990	1980	1985	1990
TOTAL LICENSED ANGLERS	295 771	331 152	240 728	12 673	12 158	9 248	308 444	343 310	249 976
TOTAL ACTIVE ADULT ANGLERS	252 059	294 465	22 283	11 412	11 284	8 752	263 471	305 749	229 035
TOTAL DAYS FISHED ('000)	4 450.9	5 311.3	3 285.8	60.2	61	54.5	4 511	5 372.2	3 340.3
TOTAL FISH CAUGHT AND RETAINED ('000)	10 441.6	11 126.5	5 062.2	130.9	87.9	55.5	10 572.5	11 214.4	5 117.7
TOTAL DIRECT EXPENDITURES (\$'000)	60 416.3	127 023.1	130 142.5	2 513.9	5 467.1	4 011.1	62 570.2	132 490.2	134 153.6
MAJOR PURCHASES/ EXPENDITURES (\$'000)	179 322.6	333 850.7	388 422	735.7	553.8	1230.1	180 058.3	334 404.5	389 652.1
TOTAL ATTRIBUTABLE TO SPORTFISHING (\$'000)	91 394.8	161 802.9	316 144.5	562.3	355.5	4 793	91 957.1	162 158.4	186 783.9

* A THREE-FOLD INCREASE IN LICENSE FEES MAY HAVE CONTRIBUTED TO A DECLINE IN LICENCE SALES BETWEEN 1985 AND 1990.

8.0 CONCLUSIONS

The results of the 1990 survey of sport fishing in Alberta confirm that it is a significant form of outdoor recreation and a major user of the fish resources of the province. Three measures of that significance are contained in the results of the survey. First, anglers spent \$134.2 million on activities directly associated with sport fishing. Secondly, anglers invested \$389.6 million on major durables and property, of which \$186.8 million was used for sport fishing. In all, anglers invested a total of \$523.8 million in 1990, of which \$320.9 million was directly attributed to sport fishing.

The third measure concerns fishing effort and harvests. Overall, 249,976 adult anglers purchased an Alberta sportfishing licence in 1990, and of these 229,035 actively participated in the sport. More than 229,283 of the active anglers were residents of the province. Anglers fished a total of 3.3 million days in 1990, and they harvested 5.1 million fish of all species. These fish weighed 3.1 million kilograms or 6.9 million pounds. The average angler fished approximately 15 days, while spending \$1,430 and catching 60 fish. Twenty-two of these fish, weighing a total of 30 pounds (13 kg), were kept. The number of fish kept decreased primarily as a result of an increase in catch-and-release fishing.

Anglers indicated they were more concerned about the fishing experience than catching fish. Lack of pollutants in fish and water quality were rated as the two most important factors while size and number of fish were rated seven and eight, respectively. Although fish provided the focus for angling activity, other elements such as relaxation and enjoyment of nature contributed to a greater recreational experience.